

CLAIMS

[1] A combined oil-control ring consisting of a spacer-expander (7) and a pair of side rails (5,6) supported by the spacer expander (7), characterized in that at least ears of the spacer expander made of austenitic stainless steel in contact with inner peripheral surfaces of the side rails are subjected to gas nitriding at a temperature of 470°C or higher to form a 10 to 60 μ m thick gas-nitriding surface-layer comprising a phase having peaks at $2\theta = 40^\circ$ and $2\theta = 46^\circ$ by Cu-K α X-ray diffraction.

[2] A combined oil-control ring consisting of a spacer-expander (7) and a pair of side rails (5,6) supported by the spacer expander (7), characterized in that a resin coating film (31) is formed on at least surfaces of the spacer expander faced to side surfaces of the side rails or on at least surfaces of the side rails faced to the spacer expander.

[3] An oil-control ring according to claim 2, wherein said resin coating film (31) comprises a fluorocarbon resin.

[4] An oil-control ring according to claim 2, wherein said resin coating film (31) comprises a solid lubricant.

[5] An oil-control ring according to claim 2, wherein said resin coating film (31) comprises at least one of TiO₂ and C12A7 compound.

[6] A combined oil-control ring consisting of a spacer-expander (7) and a pair of side rails (5,6) supported by the spacer expander (7), characterized in that at least ears of the spacer expander made of austenitic stainless in contact with inner peripheral surfaces of the side rails, are subjected to gas nitriding at a temperature of 470°C or higher to form a 10 to 60 μ m thick gas-nitriding surface layer comprising a phase having peaks at $2\theta = 40^\circ$ and $2\theta = 46^\circ$ by Cu-K α X-ray diffraction, and further, a resin coating film (31) is formed at least on side surfaces of the spacer expander (7) faced to the side rails or on at least surfaces of the side rails (5,6) faced to the spacer expander (7).

[7] An oil-control ring according to claim 6, wherein said resin coating film (31) comprises a fluorocarbon resin.

[8] An oil-control ring according to claim 6, wherein said resin coating film (31) comprises a solid lubricant.

[9] An oil-control ring according to claim 6, wherein said resin coating film (31) comprises at least one of TiO₂ and C12A7 compound.

[10] A nitriding method, characterized in that an austenitic stainless steel is subjected to gas nitriding at a temperature of from 470 to 600°C to form a phase having peaks at $2\theta = 40^\circ$ and $2\theta = 46^\circ$ by Cu-K α X-ray diffraction (hereinafter

referred to as "S phase"), and subsequently the gas-nitriding is stopped prior to transforming the S phase into other compound phases and disappearance of the S phase, thereby forming on the surface of the austenitic stainless steel a nitriding surface layer comprising the S phase.

5 [11] A nitriding method according to claim 10, wherein said nitriding surface layer has a $10 \mu\text{m}$ or more thickness.